

Effects of Assistive Communication Training on Stereotypy with Individuals with ASD

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Abstract

Participants with autism spectrum disorder were exposed to communication training using the ProxTalker®. Two male participants were selected with histories of limited use to effective assistive communication and defined stereotypic behaviors. Participants were exposed to a systematic communication training using the device. Modifications to the systematic teaching procedures for communication training were made to delay increasing distance from the device. The effects of the communication training on observed stereotypic behaviors were measured through scheduled videotaped observation using a time sampling procedure. The results showed a decrease in motor stereotypic behaviors in the participants as they progressed through communication phases.

Keywords

Autism spectrum disorder, communication training, behavior

Introduction

When establishing an effective training method to increase communication for people with autism spectrum disorder (ASD), it is important to determine the type of methodology to be used (selection-based or topography-based) to achieve functional communication. Early verbal behavior studies found more favorable results with the use of a topography-based program; it was not investigated specifically for individuals with ASD (Sundberg and Sundberg). Individuals with ASD with an inability to vocally communicate and/or inability to perform fine motor tasks involved with sign language were excluded from early studies.

A later study found in comparison to typically developing children of the same intellectual age, children with ASD study reached mastery sooner with the selection-based communication for tacts and intraverbals (Vignes). The use of augmentative and alternative communication (AAC) with naturalistic teaching procedures demonstrated an increase in communicative interactions with others for four young children with ASD (Schepis, Reid, Behrmann, and Sutton).

Selection-based methods of communication are increasing in applied settings with AACs, advances in technology and utilizing the Picture Exchange Communication System (PECS). PECS has six distinct training phases that systematically increase to phrases with a sentence strip using line drawings, photos or pictures (Bondy, Tincani and Frost). A significant difference was not found in acquisition of requesting skills between use of PECS book or AAC device using PECS training for three children with autism (Boesch, Wendt, Subramanian and Hsu).

The combination of the PECS phases and behavioral intervention was found to be effective to decrease identified stereotypic behaviors and increase communication with individuals on the autism spectrum (Malhotra, Rajender, Bhatia and Singh).

The purpose of this study was to assess the effect of utilizing the phases of PECS for communication with an AAC (ProxTalker®), on defined stereotypic behaviors for two participants with histories of limited use to effective assistive communication.

Method

Participants & Settings

Two boys with ASD were the participants of this study. Don, 10, had limited independent and effective communication and had previous exposure to a photo communication book and had not mastered Phase II of PECS. Ronnie, 9, used verbalizations of phrases (prompted or spontaneous) as a primary mode of communication with no exposure to AAC. Stereotypic behaviors (motor and vocal) occurred persistently throughout the school day for both participants and limited time for academic instruction.

All sessions to date occurred in the participants' school while following their normal school day routine and academic programming. During intervention and school hours, all participants had access to the ProxTalker® and picture tags. Instruction for the AAC was at each participant's communication training phase determined by phase criteria.

Response Measurement

Vocal stereotypy examples included: nonfunctional vocalizations, echolalic responses, lips moving with/without audible sounds. Motor stereotypy examples included: tapping surfaces, rubbing hands together in repetition, jumping up when not instructed, clapping when not functional and/or placing 1 or more fingers in clothing with a twisting motion.

The effects of communication training using an AAC for stereotypic behaviors were measured using a time sampling procedure. In all phases, stereotypic behaviors were scored for

presence or absence in 10 minute sessions divided into 15 second intervals. All sessions were videotaped.

Reliability

A second observer independently collected data on stereotypic behaviors and eye gaze shift from videotaped sessions. Interobserver agreement data were collected for a minimum of 30% of sessions in each condition across all phases and participants; mean agreement was 86.5% for participant Ronnie and 74% for participant Don.

Procedure

During baseline, the staff collected partial-interval recording data on stereotypic behaviors during varied times throughout the school day in the absence of the AAC and communication training.

Phase I

A second staff member was placed behind the student and manually guided the steps to create voice output. The target objective was defined as the participant demonstrating the ability to pick up the picture tag of the item in a single array and place the tag on a location button on the ProxTalker®, creating a voice output when presented with a highly preferred item with a minimum of 8 out of 10 correct and independent trials. Data probes were conducted to determine participant acquisition of this phase.

Phase II

Phase II was modified from the traditional communication training of increasing distance between the user and the book. The terminal objective for the modified Phase II was for participants to discriminate between highly preferred item pictures and distracter pictures until a

minimum of 8 out of 10 correct and independent trials occurred. The student requested desired items that were placed in their line of vision, by selecting the appropriate picture from an array on the ProxTalker® and placing the tag on a location button creating voice output. This phase had three parts; highly preferred versus non preferred, highly preferred versus highly preferred and up to 5 highly preferred items. The error correction procedure was the same as Phase I.

Phase III

The terminal objective for the modified Phase III was for participants to request present and non-present items using a multi-word phrase by going to the ProxTalker®, picking out the tag “I want” and placing on the location button, picking out the tag of what is wanted on the location button and pushing each tag to create voice output until a minimum of 8 out of 10 correct and independent trials occurred. The error correction procedure was the same as previous phase.

Phase IV

The terminal objective for the modified Phase IV was for participants to request present and non-present items/activities using a multi-word phrase by going to the ProxTalker®, picking out the tag “I want”, the appropriate verb “to_____” and placing on the location button, picking out the tag of what is wanted on the location button and pushing each tag to create voice output until a minimum of 8 out of 10 correct and independent trials occurred. The error correction procedure was the same as previous phase.

Phase V

The terminal objective for the modified Phase V was for participants to request present and non-present items/activities using a multi-word phrase by going to the ProxTalker®, picking out the tag “I want”, the appropriate verb “to_____”, one descriptor word tag (colors, shape or

size) and placing on the location button, picking out the tag of what is wanted on the location button and pushing the green circle all play button. The student commented on present items using a multi-word phrase by going to the ProxTalker®, picking out the tag, “I see”, one descriptor word tag (colors, shape, size), the tag for the item described and placing all on the location buttons and pushing the green circle all play button. The objective was met when a minimum of 8 out of 10 correct and independent trials occurred. The error correction procedure was the same as the previous phase.

Phase VI

The terminal objective for the modified Phase VI was for participants to seek out communication device from increasing distances within the classroom environment (1 foot, 3 feet, 5 feet) when instructed or presented with opportunities to communicate with others until a minimum of 8 out of 10 correct and independent trials occurred. The error correction procedure was the same as the previous phase.

Discussion

The results for participant 1 are shown in Figure 1 and Figure 2. For Don, there was a continued variable engagement of stereotypic behaviors, with vocal stereotypy increasing. During sessions 16 & 17, Phase II B trials required increased prompting when selecting from two highly preferred items. Stimulus prompts were placed on the device to assist with placing the tags on the correct location buttons. The results for Figure 1 reflect that the amount of vocal stereotypy did not decrease between baseline and intervention phases. The baseline average for engagement in observed trials of vocal stereotypy was 44% of measured trials. The intervention average for engagement of observed trials of vocal stereotypy was 51% of measured trials. The results of displayed in Figure 1 and Figure 2 reflect that the amount of motor stereotypy did

decrease between baseline and intervention phases. The baseline average for engagement in observed trials of motor stereotypy was 25% of measured trials. The intervention average for engagement of observed trials of motor stereotypy was 10% of measured trials. Figure 2 shows the motor stereotypy decrease in isolation.

The results for participant 2 are demonstrated in Figure 3 and Figure 4. Ronnie had a decrease in both vocal and motor stereotypy in the intervention phase in comparison to the baseline phase. The summary graph in Figure 3 shows that the amount of vocal stereotypy engagement did decrease from baseline average of 59% of measured intervals to an intervention average of 35% of measured intervals. Figure 4 shows the motor stereotypy decrease across phases in isolation.

Conclusions

The results reflect that for both participants there was a decrease in motor stereotypy with the use of the ProxTalker® using a modified communication training protocol. For both participants, there was also an increase in mastered communication exchange phases. Also for both participants there was an increase in independent communicative intent, vocalizations for Don and typing/use of a tablet device for Ronnie.

Anecdotal staff notes did show that for participant Don, there was an increase in reported vocalizations throughout the school day. It should also be noted that for participant Don, any vocalization was counted as vocal stereotypy. This may lead to discounting vocalizations that are intended to communicate with another individual and scoring them as stereotypic behaviors leading to higher percentages.

Anecdotal staff notes for participant Ronnie included that after mastery of modified Phase V, the participant showed independent interest in using text for communication. The

continued combination of the ProxTalker® training with communication with text was maintained after the student mastered Phase VI of the phases.

The participant sample in this study was relatively small and the focus of the behaviors targeted did not include those with extreme severity. For future investigations, it would be recommended to increase the number of participants with more intensive behaviors (eg. aggressions to others and self-injury). It would also be recommended to examine the effects of using the ProxTalker® on the rate acquisition of receptive identification programs with non-verbal students compared with traditional materials.

Works Cited

- Boesch, Miriam, Wendt, Oliver, Subramanian, Anu & Hsu, Ning (2013). Comparative efficacy of the Picture Exchange Communication System (PECS) versus a speech generating device: Effects on requesting skills. *Research in Autism Spectrum Disorders, 7*, 480-493.
- Bondy, Andy, Tincani, Matt & Frost, Lori. (2004). Multiply controlled verbal operants: An analysis and extension to the Picture Exchange Communication System. *The Behavior Analyst, 27* (2) 247-261.
- Malhotra, Shahzadi, Rajender, Guarev, Bhatia, Manjeet. & Sing, Tej (2010). Effects of Picture Exchange Communication System on communication and behavioral anomalies in autism. *Indian Journal of Psychological Medicine, 32* (2), 141-143.
- Schepis, Maureen Reid, Dennis, Behrmann, Michael & Sutton, Kelly (1998). Increasing communicative interactions of young children with autism using a voice output communication aid and naturalistic teaching. *Journal of Applied Behavior Analysis, 31*, 561-578.
- Sundberg, Carl & Sundberg, Mark (1990). Comparing topography-based verbal behavior with stimulus selection-based verbal behavior. *The Analysis of Verbal Behavior, 8*, 31-41.
- Vignes, Tore. (2007). A comparison of topography-based and selection-based verbal behavior in typically developed children and developmentally disabled persons with autism. *The Analysis of Verbal Behavior, 23*, 113-122.